

SDMS US EPA Region V
Imagery Insert Form

Document ID:

173615

Some images in this document may be illegible or unavailable in SDMS. Please see reason(s) indicated below:

☐ Illegible due to bad source documents. Image(s) in SDMS is equivalent to hard copy.

Specify Type of Document(s) / Comments:

☒ Includes ____ COLOR or X RESOLUTION variations.

Unless otherwise noted, these images are available in monochrome. The source document page(s) is more legible than the images. The original document is available for viewing at the Superfund Records Center.

Specify Type of Document(s) / Comments:

ATTACHMENT 2 & 3 - PHOTOCOPIES OF MAPS

☐ Confidential Business Information (CBI).

This document contains highly sensitive information. Due to confidentiality, materials with such information are not available in SDMS. You may contact the EPA Superfund Records Manager if you wish to view this document.

Specify Type of Document(s) / Comments:

☐ Unscannable Material:

Oversized ____ or ____ Format.

Due to certain scanning equipment capability limitations, the document page(s) is not available in SDMS. The original document is available for viewing at the Superfund Records center.

Specify Type of Document(s) / Comments:

☐ Document is available at the EPA Region 5 Records Center.

Specify Type of Document(s) / Comments:

173615

First Five-Year Review Report

**First Five-Year Review Report
for
The Torch Lake Superfund Site
Houghton County, Michigan**


March 2003

PREPARED BY:

**United States Environmental Protection Agency
Region 5
Chicago, Illinois**

Approved by:

Date:

for 

William E. Muno, Director
Superfund Division

3/4/03

Table of Contents

<u>Section</u>	<u>Page</u>
List of Acronyms.....	4
Executive Summary.....	5
Five-Year Review Summary Form.....	6
 I. Introduction.....	 9
 II. Site Chronology.....	 10
 III. Background.....	 11
Physical Characteristics.....	11
Land and Resource Use.....	11
History of Contamination.....	12
Initial Response.....	13
Basis for Taking Action.....	15
 IV. Remedial Actions.....	 17
Remedy Selection.....	17
Remedy Implementation.....	19
Operation and Maintenance (O&M).....	22
 V. Progress Since the Last Five-Year Review.....	 22
 VI. Five-Year Review Process.....	 22
Administrative Components.....	22
Community Involvement.....	23
Document Review.....	23
Data Review.....	23
Site Inspections.....	26
Interviews.....	26
 VII. Technical Assessment.....	 26
Question A: Is the remedy functioning as intended by the decision documents?.....	26
Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid?.....	26
Question C: Has any other information come to light that could call into question the protectiveness of the remedy?.....	27
Technical Assessment Summary.....	27
 VIII. Issues.....	 28
 IX. Recommendations and Follow-up Actions.....	 29
 X. Protectiveness Statement(s).....	 31
 XI. Next Review.....	 31
 Tables	
Table 1 - Chronology of Site Events.....	10
Table 2 - Issues.....	28
Table 3 - Recommendations and Follow-Up Actions.....	29
 Attachments	
Attachment 1 - Site Location and Plan Map	
Attachment 2 - Torch Lake Site Map/Borrow Soil Source Areas	
Attachment 3 - Point Mills Site Map	
Attachment 4 - List of Documents Reviewed	
Attachment 5 - Applicable or Relevant and Appropriate Requirements (ARARs)	
Attachment 6 - Summary of Access Issues at Point Mills	

List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	United States Environmental Protection Agency
CFR	Code of Federal Regulations
ESD	Explanation of Significant Difference
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PPB	Parts per Billion
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
VOC	Volatile Organic Compound

Executive Summary

The remedy for the Torch Lake Superfund Site in Houghton County, Michigan includes stabilization and covering (soil and vegetation) of contaminated mine tailings and slags, institutional controls, natural recovery of area water bodies, and long-term monitoring of area water bodies and groundwater. The Site has not achieved construction completion. However, the remedy is progressing as expected and it is anticipated to be complete in 2003 or 2004. The trigger for this five-year review was the remedial action funding obligation on September 23, 1998.

The assessment of this five-year review is that EPA expects the remedy will be protective of human health and the environment and function as intended once all the remedy has been completed in accordance with the two Records of Decision and the four memoranda to the Site file. It is anticipated that the time needed for the natural recovery of area water bodies will be determined over the next ten years through long-term monitoring. Long-term monitoring is expected to be conducted for the next 30 years.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name (from WasteLAN): Torch Lake Superfund Site		
EPA ID (from WasteLAN): MID980901946		
Region: 5	State: MI	City/County: Houghton County
SITE STATUS		
NPL status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input checked="" type="checkbox"/> Under Construction <input type="checkbox"/> Operating <input type="checkbox"/> Complete		
Multiple Ous?* <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Construction completion date: __/__/__	
Has site been put into reuse? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Steven J. Padovani		
Author title: Remedial Project Manager	Author affiliation: U.S. EPA, Region 5	
Review period:** <u>10 / 7 / 2002</u> to <u>3 / 00 / 2003</u>		
Date(s) of site inspection: <u>10 / 07 / 2002</u> through <u>10 / 09 / 2002</u>		
Type of review: <div style="text-align: right; margin-top: 10px;"> <input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion) </div>		
Review number: <input checked="" type="checkbox"/> 1 (first) <input type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div> <input type="checkbox"/> Actual RA On-site Construction at OU # ____ <input type="checkbox"/> Construction Completion <input type="checkbox"/> Other (specify) </div> <div> <input checked="" type="checkbox"/> Actual RA Start at OU# <u>NA</u> <input type="checkbox"/> Previous Five-Year Review Report </div> </div>		
Triggering action date (from WasteLAN): <u>9 / 23 / 1998</u>		
Due date (five years after triggering action date): <u>9 / 23 / 2003</u>		

* ["OU" refers to operable unit]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

- 1) Need to complete all remedy requirements in accordance with the 1992 ROD and memoranda to Site file.
- 2) Need to ensure deed restrictions are in place in accordance with the 1992 ROD and 1994 AOC (see Section III - Initial Response). To date, only a small number of these restrictions have been verified to be in place.
- 3) Need to conduct a periodic review of groundwater uses at the Site and the effectiveness of the county well permitting process in preventing drinking water well installation in tailings at the Site. Currently, EPA is not aware of any drinking water wells at the Site that use tailings as a potable water source.
- 4) Need to make repairs to cover material and shoreline protection, as necessary, to ensure long-term integrity of remedy.
- 5) Need to investigate MDEQ observation that tailings have been applied around recently installed culverts and on the surface of trails and campground pads at the Lake Linden parcel.
- 6) Need to complete restoration of Mason borrow-soil source.
- 7) Need to complete evaluation of North Entry and Scales Creek for possible elimination from remediation plans.
- 8) Need to resolve access issues at Point Mills (summary in attachment 6).
- 9) Need to evaluate long-term access for conducting monitoring and O&M activities.
- 10) Need to evaluate Houghton County Road Commission's road traction tailing excavation practices at Point Mills relative to 1992 ROD requirements.
- 11) Evaluate the need for deed restrictions to prevent the development of residences in the slag area of Quincy Smelter.

Recommendations and Follow-up Actions:

- 1) Maintain current IAG contract with USDA-NRCS and work cooperatively with USDA-NRCS to ensure the work is adequately completed.
- 2) Continue to seek documentation from landowners at the Site to verify proper deed restrictions have been put in place, and if they are not, work with the landowners and/or county to ensure deed restrictions are put in place.
- 3) Conduct periodic on-Site inspections of groundwater use and work with county officials to evaluate the effectiveness of the county well permitting process in preventing the installation of drinking water wells in tailings.
- 4) Conduct routine inspections and coordinate repair work with USDA-NRCS and/or State.
- 5) Conduct Site inspection and if tailings are confirmed, evaluate the potential for the tailings to enter Torch Lake.
- 6) Ensure USDA-NRCS addresses and adequately completes this work in 2003.
- 7) Review State response to EPA's 12/27/02 letter and establish a final position in a letter to the State.

- 8) Continue to work with the Office of Region Counsel, Department of Justice, and the Federal court system to enforce two Administrative Orders for Access dated April 2002.
- 9) Review 1994 AOC and other access agreements for applicability to long-term access. Seek additional/updated access agreements where necessary.
- 10) Work with the Houghton County Road Commission to ensure practices are consistent with the 1992 ROD and/or evaluate the need for possible modification of the specific 1992 ROD requirements on this issue to better reflect current engineering and protectiveness needs.
- 11) Work with landowner and stakeholders to determine Historical Park redevelopment schedule. If a redevelopment schedule cannot be committed to by the end of 2003, work with the landowner and/or county to have deed restrictions immediately in place to prevent residential development of the slag area.

Protectiveness Statement(s):

The remedy will be protective of human health and the environment once all the remedy has been completed in accordance with the two Records of Decision and the four memoranda to the Site file.

Long-term Protectiveness:

Natural recovery of area water bodies will be verified by a long-term monitoring program. It is anticipated that the time needed for the adequate natural recovery of area water bodies will be determined over the next ten years through the long-term monitoring program. Long-term monitoring is expected to be conducted for the next 30 years.

Other Comments:

None.

**TORCH LAKE SUPERFUND SITE
HOUGHTON COUNTY, MICHIGAN
FIVE-YEAR REVIEW REPORT**

I. INTRODUCTION

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

EPA is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

EPA interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

EPA, Region 5, conducted the five-year review of the remedy being implemented at the Torch Lake Superfund Site in Houghton County, Michigan. This review was conducted by the Remedial Project Manager (RPM) for the entire Site from October 2002 through January 2003. This report documents the results of the review.

This is the first five-year review for the Torch Lake Superfund Site. The triggering action for this statutory review was the remedial action funding obligation on September 23, 1998. This five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

Table 1: Chronology of Site Events

EVENT	DATE
Environmental Concern Develops Concerning Century-Long Deposition of Tailings	1970s
International Joint Commission Designates Torch Basin as a Great Lakes Area of Concern (AOC)	1983
Michigan Department of Public Health (MDPH) Announces Fish Advisory on Sauger and Walleye	1983
Proposed on NPL	October 15, 1984
Listed on NPL	June 10, 1986
Draft Remedial Action Plan	1987
Notice Letters Sent to PRPs for RI/FS Work (negotiations fail)	June 13, 1988
RI/FS (fund lead)	November 1988 - September 1992
Administrative Order on Consent (AOC) issued to PRPs to remove shoreline and submerged drums	July 30, 1991
PRP AOC Removal Activities	September 1991
ROD for OU I and OU III Signed by EPA	September 30, 1992
MDPH Removes Special Fish Advisory on Sauger and Walleye in Torch Lake	1993
ROD for OU II Signed by EPA	March 31, 1994
RD (fund lead-USDA/NRCS) for OU I & OU III Start & Complete	September 30, 1994 - September 10, 1998
EPA Obligates \$15.2 million for RA Work	September 23, 1998
On-Site Construction Begins (Lake Linden Portion)	Summer 1999
Hubbell/Tamarack Construction	Summer 2000
EPA Completes Baseline Study Report	August 2001
Mason Construction	Summer 2001/2002
Point Mills & Dollar Bay Construction	Summer 2002
Five-Year Review Site Inspections	October 7 - 9, 2002
EPA Completes Terrestrial Ecology Study of Site	March 2003
Complete all On-Site Construction Activities	2003 or 2004
Complete Second Site Wide Five-Year Review	2008

III. BACKGROUND

Physical Characteristics

The Torch Lake Superfund site (the Site) is located on the Keweenaw Peninsula in Houghton County, Michigan (attachment 1). The Site includes Torch Lake, the western shore of Torch Lake, the northern portion of Portage Lake, the Portage Lake Canal, Keweenaw Waterway, the North Entry to Lake Superior, Boston Pond, and Calumet Lake. Tailing and slag piles deposited along the western shore of Torch Lake, Northern Portage Lake, Keweenaw Waterway, Lake Superior, Boston Pond, and Calumet Lake are also included as part of the Site. These tailing piles include tailings at Lake Linden, Hubbell/Tamarack City, Mason, Calumet Lake, Boston Pond, Michigan Smelter, Isle-Royale, Lake Superior, and Gross Point. The slag piles are located at Quincy Smelter, Michigan Smelter and Hubbell.

The northeast/southwest trending Keweenaw Peninsula lies within the Superior bedrock controlled uplands province of the Lake Superior basin. Drainage patterns in the peninsula are controlled largely by bedrock type, and follow faults and fractures in the Precambrian bedrock. Soils in the area primarily consist of sandy loams, and silty loams. They are developed in till, outwash, Holocene alluvium, and red clay. The major surface water bodies in the region comprise the Keweenaw Waterway including Torch Lake, Portage Lake, and Lake Superior. Torch Lake is a tributary to the larger Portage Lake which in turn has outlets to Lake Superior via the Portage Canal and to Keweenaw Bay via the Portage River. Streams in the region drain to the Keweenaw Waterway and Lake Superior. The Torch Lake watershed comprises about 12 percent of the larger Portage Lake basin.

Forest vegetation in the area is primarily coniferous. Spruce, larch, fir, and pine are the common species. Deciduous vegetation also occurs in the area although to a lesser degree. Important species include sugar maple, birch, and aspen. In addition, several species of trees and shrubs are prominent on some relatively small areas of tailing piles, including balsam poplar, fir, willow, red osier-dogwood, spruce, alder, tamarack, white birch, aspen, and northern white cedar.

Several small communities are located on the west shore of Torch Lake, the largest of which are Lake Linden, Hubbell/Tamarack City, and Mason. Two large cities, Houghton and Hancock, are located on the south and north side of Keweenaw Waterway. Calumet City is located 5 miles north of Torch Lake.

Torch Lake has a surface area of approximately 2,700 acres, a mean depth of 56 feet, a maximum depth of 115 feet, and a volume of 5.2×10^9 cubic feet. The Trap Rock river and several small creeks discharge into Torch Lake.

Wetlands are located on the east portion of the Lake Linden tailing pile, on the eastern edge of the Hubbell tailing pile, around Boston Pond, and the eastern shore of Torch Lake. The Site does not lie within the 100 year flood-plain.

Land and Resource Use

Torch Lake is used for fishing, boating, limited contact recreation (swimming), non-contact cooling water supply, treated municipal waste assimilation, and wildlife habitat.

The municipal well for Lake Linden is located upstream of the Trap Rock river, 0.7 miles north of Lake Linden. The supply of drinking water for Hubbell/Tamarack City is piped from wells located on the shore of Lake Superior, 9 miles west of Torch lake. The municipal well for Mason is located on the tailing pile in Mason, and the municipal well for Houghton is located on the Isle-Royale tailing pile. The municipal well for Hancock is located in Adams Township, 5 miles southeast of Hancock. Several homes are located in the Isle-Royale tailing pile with their own private wells. These wells were installed more than 20 years ago and it is EPA's understanding that these wells are cased to bedrock and draw their water from the bedrock aquifer and not from the tailings. In addition, all other homes at Isle-Royale are on municipal water.

While most tailing pile areas have been barren and unused before 1999 (the start of on-Site Superfund remediation work), there has been some development. Two sewage lagoons are located on the Lake Linden tailing pile. Two sewage lagoons are also located on the Hubbell/Tamarack City tailing pile. Portage Lake Water and Sewage Authority has constructed a sewage treatment plant on 12 acres of the Isle-Royale tailings. Superior Block Co., located on the Isle-Royale tailing pile, is currently utilizing 60 acres of the Isle-Royale tailings for the production and storage of cement blocks. The residential development located on the Isle-Royale tailings are estimated to cover 80 acres. The Houghton County Road Commission is currently using tailing materials, approximately 20 acres at Point Mills, to spread on the roads during winter to provide traction for motor vehicles. Tailings also had been used in the past as a base for road construction because of good drainage characteristics. The Village of Lake Linden has been developing a facility with a bathing beach, camping, park, and boat ramps at the northeast end of Torch Lake. In general, the Lake Linden portion of the Site (remedy implemented in 1999) has been put to use as a recreation area, including the completion of a perimeter road, nature/hiking trails and a camp ground. In addition, a State grant sponsored planting of new trees is also underway.

The Quincy Mining Company Historic District and Calumet Historic District, which were proposed as a National Historical Park in September 1987, are located within the Site.

As a result of Superfund remedial action work beginning in 1999, approximately 500 acres along the western shore of Torch Lake and approximately 120 acres at Point Mills/Dollar Bay have been covered with 6 to 10 inches of soil and vegetation. An abundance of wildlife, including several species of bird and mammals, now flourish in these areas. Two nests of bald eagles, which are designated as Endangered Species, are located on the northern side of Portage Lake.

History of Contamination

Torch Lake was the site of copper milling and smelting facilities and operations for over 100 years. The lake was a repository for milling wastes, and served as the waterway for transportation to support the mining industry. The first mill opened on Torch Lake in 1868. At the mills, copper was extracted by crushing or "stamping" the rock into smaller pieces, grinding the pieces, and driving them through successively smaller meshes. The copper and crushed rock were separated by gravimetric sorting in a liquid medium. The copper was then sent to a smelter. The crushed rock particles, called "tailings" or "stamp sands," were discarded along with mill processing water, typically by pumping it into the lakes.

Mining output, milling activity, and tailing production peaked in the Keweenaw Peninsula in the early 1900s to 1920. All of the mills at Torch Lake were located on the western shore of the lake and many other mining mills and smelters were located throughout the peninsula. In about 1916, advances in technology allowed recovery of copper from tailings previously deposited in Torch Lake. Dredges were used to collect submerged tailings, which were then screened, re-crushed, and gravity separated. An ammonia leaching process involving cupric ammonium carbonate was used to recover copper and other metals from conglomerate tailings. During the 1920s, chemical reagents were used to further increase the efficiency of reclamation. The chemical reagents included lime, pyridine oil, coal tar creosotes, wood creosote, pine oil, and xanthates. After reclamation activities were complete, chemically treated tailings were returned to the lakes. In the 1930s and 1940s, the Torch Lake mills operated mainly to recover tailings in Torch Lake. In the 1950s, copper mills were still active, but by the late 1960s, copper milling had ceased.

Over 5 million tons of native copper was produced from the Keweenaw Peninsula and more than half of this was processed along the shores of Torch Lake. Between 1868 and 1968, approximately 200 million tons of tailings were dumped into Torch Lake filling at least 20 percent of the lake's original volume. While the Rivers and Harbors Act of 1890 did prohibit the filling or obstruction of any navigable waterway in the United States without prior consent of the Secretary of War, one locality in the country, Torch Lake, is specifically exempted from this prohibition. In addition, dumping in Torch Lake was further permitted during World War I when copper mining, milling, and smelting operations were operated for the war effort, by the War Production Board.

In June 1972, a discharge of 27,000 gallons of cupric ammonium carbonate leaching liquor occurred into the north end of Torch Lake from the storage vats at the Lake Linden Leaching Plant. The Michigan Water Resources Commission (MWRC) investigated the spill. The 1973 MWRC report discerned no deleterious effects associated with the spill, but did observe that discoloration of several acres of lake bottom indicated previous discharges.

Initial Response

In the 1970s, environmental concern developed regarding the century-long deposition of tailings into Torch Lake. High concentrations of copper and other heavy metals in Torch Lake sediments, toxic discharges into the lakes, and fish abnormalities prompted many investigations into long-and short-term impacts attributed to mine waste disposal. The International Joint Commission Water Quality Board designated Torch Lake as a Great Lakes Area of Concern (AOC) in 1983. Also in 1983, the Michigan Department of Public Health (MDPH) announced an advisory against the consumption of Torch Lake sauger and walleye. The Site was proposed for inclusion on the National Priorities List (NPL) in October of 1984. The Site was placed on the NPL in June 1986. The Site is also on the Act 307 Michigan Sites of Environmental Contamination Priority List.

Also in 1986, experts at Michigan Technological University in Houghton, Michigan published a report, which included various papers on Torch Lake. This report included: a Tumor Induction Study; Environmental Fate of Xanthates and Creosote; Tumor Incidence and parasite survey of Perch from Torch Lake; Heavy Metals in Sediments and Mining Wastes of Torch Lake; and a Copper Budget study of Torch Lake.

A Draft Remedial Action Plan (RAP) for Torch Lake was developed by Michigan Department of Natural Resources (MDNR) in October, 1987 to address the contamination problems and to recommend a remedial action for Torch Lake. Revegetation of lakeshore tailings to minimize air-borne particulate matter was one of the recommended remedial actions in the RAP.

In 1988, in response to the RAP, the MDNR conducted a water quality and fish tissue study. Tissue from 458 fish was collected from both Torch and Portage Lakes. Only 4 of the 56 fish analyzed for mercury had concentrations that exceeded the 0.5mg/kg consumption advisory action limit and none exceeded the 1.0mg/kg limit. No internal or external growth anomalies were discovered and no liver neoplasms (i.e., cancerous growths) were found among the 47 walleye examined. Sauger was not collected during this survey because of an extended population decline, which had begun in the 1960s. In 1993, the fish consumption advisory was lifted by MDPH. However, based on routine fish monitoring activities conducted by the Michigan Department of Environmental Quality (MDEQ) Surface Water Quality Division for the Michigan Department of Community Health (MDCH), in 1998, the MDCH reissued fish consumption advisories for Portage Lake and Torch Lake. The 1998 fish advisories are currently in effect and are as follows:

MDCH FISH CONSUMPTION ADVISORY

(Fish length in inches)

LAKE	SPECIES	CONTAMINANT(s)	GENERAL POPULATION	WOMEN & CHILDREN
Portage	Brown Trout	PCBs	unlimited	10-14 unlimited 14-22 one meal/week 22+ one meal/month
Portage	Walleye	Mercury, PCBs	14-22 unlimited 22+ one meal/week	14-22 unlimited 22+ one meal/month
Torch	Smallmouth Bass	Mercury, PCBs	14+ one meal/week	14+ one meal/month
Torch	Walleye	Mercury, PCBs	14+ one meal/week	14+ one meal/month

For more information, contact MDHC at 1-800-648-6942 or online at www.mdch.state.mi.us/pha/fishadvi.htm

Attempts to establish vegetation on the tailing piles in Hubbell/Tamarack City have been conducted since the 1960s to stabilize the shoreline and to reduce air particulate matter from tailings. It has been estimated that 40 to 50 percent of tailings in this area are vegetated. The Portage Lake Water and Sewage Authority has been spray-irrigating sewage sludge on tailings in Mason to promote natural vegetation.

None of the original mining companies directly responsible for the Site are in existence. EPA instead located companies linked to the original mining companies. On May 9, 1988, Remedial Investigation/Feasibility Study (RI/FS) Special Notice Letters were issued to Universal Oil Products (UOP) and Quincy Mining Co. UOP is the successor of Calumet Hecla Mining Company which operated its milling and smelting on the shore of Lake Linden and disposed of the generated tailings in the area. Quincy Mining Co. conducted smelting operations in the Hubbell area and disposed of tailings. On June 13, 1988, a Notice Letter was issued to Quincy Development Company, which was the current owner of a tailing pile located on the lake shore in Mason. Negotiations for the RI/FS Consent Order with these Potentially Responsible Parties (PRPs) were not successful due to issues such as the extent of the Site and the number of PRPs. Subsequently, EPA contracted with Donohue & Associates in November 1988 to perform the RI/FS at the Site.

Due to its size and complex nature, three Operable Units (OUs) were defined for the Site. Attachment 1 shows the location of OUI, OUII and OUIII.

OUI includes surface tailings, drums, and slag piles on the western shore of Torch Lake. An estimated 500 acres of tailings are located in OUI. A smaller deposit of smelter slag, encompassing approximately 9 acres, is located near Hubbell, south of the Peninsula Reclamation Plant.

OUII includes groundwater, surface water, submerged tailings and sediments in Torch Lake, Portage Lake, the Portage Channel, Keweenaw Waterway, North Entry to Lake Superior, Boston Pond, and Calumet Lake.

OUIII includes tailing and slag deposits located at North Entry, Michigan Smelter, Quincy Smelter, Calumet Lake, Isle-Royale, Boston Pond and Grosse-Point (Point Mills/Dollar Bay). Quincy Smelter (location 06 in attachment I) is part of the Quincy Mining Historic District which is proposed as the National Historical Park.

On June 21, 1989, EPA collected a total of eight samples from drums located in the old Calumet and Hecla smelting mill site near Lake Linden, Ahmeek Mill site near Hubbell, and Quincy site near Mason. On August 1, 1990, nine more samples were collected from drums located above the Tamarack site near Tamarack city. Based on the results of these samples, EPA determined that some of these drums may have contained hazardous substances. During the week of May 8, 1989, the EPA also conducted ground penetrating radar and a sub-bottom profile (seismic) survey of the lake bottom. The area in which this survey was conducted is immediately off-shore from the old Calumet and Hecla smelting mill site. The survey located several point targets (possibly drums) on the bottom of Torch Lake. Based on the drum sampling results and seismic survey, EPA executed an Administrative Order by Consent, dated July 30, 1991, which required six companies and individuals to sample and remove drums located on the shore and lake bottom. Pursuant to the Administrative Order, these entities removed 20 drums with unknown contents from off-shore of Peninsula Copper Inc., and the old Calumet and Hecla smelting mill site in September 1991. SOS empty drums were found in the lake bottom. These empty drums were not removed from the lake bottom. A total of 82 drums and minor quantities of underlying soils were removed from the shore of Torch Lake. The removed drums and soils were sampled, overpacked, and disposed off-site at a hazardous waste landfill.

Remedial Investigations were completed for all three operable units. The RI and Baseline Risk Assessment (BRA) reports for OUI were finalized in July 1991. The RI and BRA reports for OUIII were finalized on February 7, 1992. The RI and BRA reports for OUII were finalized in April 1992. The Ecological Assessment for the Site was finalized in May 1992. A Proposed Plan identifying EPA's recommended remedy for OUI and OUIII was presented to the public on May 5, 1992, starting the period for public comment. A Proposed Plan identifying EPA's recommended remedy for OUII was presented to the public on February 17, 1994, starting the period for public comment.

During the public comment period for OUI and OUIII, UOP, through their attorneys, made it clear to the community that, under Superfund, any current owner of a Superfund site can be held jointly and severally liable, and that they, if pursued for cost recovery by EPA, would in turn potentially pursue others associated with the Site. Since the ownership of property containing tailings is very dispersed (much of the area is owned by private citizens, small businesses, or municipalities), this threat created considerable concern throughout the community. EPA responded at the time by promising that no one would be pursued for costs if their sole connection to the Site was ownership of property containing tailings. EPA subsequently entered into administrative agreements (Administrative Order on Consent) with several landowners in 1994, giving the landowners covenants not to sue and contribution protection in exchange for actions such as access and deed restrictions. The deed restriction requirements generally required the owner of the property to ensure cover material is in place over tailings. In addition, the deed restrictions were to be placed on the property within six months of the effective date of the order. Because of a combination of circumstances, including the historical distance, and the indirect connection between successors and the original mining companies, EPA closed out cost recovery actions for the Site in 1996.

In addition, on January 10, 1997, the EPA entered into a prospective purchaser agreement (PPA) with the Mason tailing pile landowners (Quincy Development Landowners and Lakeshore Estates Associates). This action was done in the spirit of redevelopment. Listing on the Superfund NPL makes owners of on-Site property potentially liable for cleanup, creating a significant disincentive for prospective purchasers and redevelopers. The 1997 PPA was intended to be a catalyst for redevelopment by relieving the Mason tailing pile landowners of potential Superfund liability. In return, specific benefits are provided to EPA, including access and borrow soil located on land owned by Lakeshore Estates Associates for no cost.

Basis for Taking Action

Contaminants

Hazardous substances that have been released at the Site in each media include:

Tailings and Slag

Aluminum	Benzo(a)pyrene
Antimony	Benzo(g,h,i)perylene
Arsenic	bis(2-Ethylhexyl)phthalate
Barium	Butylbenzylphthalate
Beryllium	Cbrysene
Cadmium	Dibenzo(a,h)anthracene
Chromium	Diethyphtbalate
Cobalt	Flouranthene
Copper	Indeno(1,2,3-cd)pyrene
Lead	2-Methylnaphthalene
Manganese	Naphthalene
Mercury	Phenanthrene
Nickel	Pyrene
Silver	
Thallium	
Vanadium	
Acenaphthylene	
Benzo(b) flouranthene	
Benzo(k)flouranthene	

Groundwater

Aluminum	Acetone
Antimony	Acenaphthene
Arsenic	bis(2-Ethylhexyl)phthalate
Barium	
Beryllium	
Cadmium	
Chromium	
Cobalt	
Copper	
Lead	
Manganese	
Mercury	
Nickel	
Potassium	
Selenium	
Silver	
Sodium	
Thallium	
Vanadium	

Sediment

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Manganese
Mercury
Nickel
Silver
Vanadium
Acetone
Benzoic Acid
Phenol
Toluene
Acenaphthylene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(g,h,i)perylene
Benzo(s)anthracene
bis(2-Ethylhexyl)phthalate
Chrysene
Dibenzo(a,h)anthracene
Dibenzofuran
Fluoranthene
Indeno(1,2,3-cd)pyrene
2-Methylnaphthalene
Naphthalene
Phenanthrene
Pyrene
PCBs

Surface Water

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Manganese
Mercury
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Acetone
bis(2-Ethylhexyl)phthalate
Butylbenzylphthalate

Exposure to tailings, slag and sediment are primarily associated with adverse effects on aquatic, terrestrial, and wetland environments.

The continuous release of tailing- and slag-borne contaminants via wind, surface water runoff, and wave erosion are deemed to represent an unacceptable and actionable source of ecological risk. The most severe ecological impact is the degradation of benthic communities (bottom dwelling organisms) associated with contaminated sediments in Torch Lake and other water bodies at the Site. The benthic community is an integral part of the base of a complex food web in lakes. A severely impacted benthic community would impact the entire food web. Toxic effects due to metals (especially copper) appear to be related to sediment pore space dynamics and seem not to have significant water column impact.

Prior to implementation of the remedy beginning in 1999, most of the tailing and slag piles were barren. Plant survival and growth on tailing and slag piles were impaired by a combination of chemical and non-chemical stresses, including poor water retention, extreme temperature fluctuation (i.e., tailing and slag piles heat up in sunlight), low organic content, and presence of toxic substances. Studies have shown that high levels of copper inhibit vascular development in some plants.

Animal populations are likely to avoid tailing deposits for many of the same reasons that the tailings have not been colonized by plants. In addition, tailings lack food and cover required for establishment of ecologically or recreationally important wildlife populations.

Deposition of tailings in surface waters is likely to have destroyed existing wetlands in a number of areas, including Boston Pond and along the western shore of Torch Lake. Wetlands are generally absent along Torch Lake shores where the most significant deposition of tailings took place, except where streams flow into the lake.

IV. REMEDIAL ACTIONS

Remedy Selection

The ROD for OUI and OUIII was signed on September 30, 1992; and the ROD for OUII was signed on March 31, 1994.

The Remedial Action Objectives (RAOs) for OUI and OUIII were developed as a result of data collected during the RI and include activities to reduce or minimize the exposure to and release of contaminants in tailings and/or slag located at the Site. These include:

1. Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site;
2. Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site;
3. Reduce or minimize the release of contaminants in tailings to the groundwater through leaching; and
4. Reduce or minimize the release of contaminants in tailings to the surface water and sediment by soil erosion and/or air deposition.

The selected remedy for OUI and OUIII has the following specific components:

1. Deed restrictions to control the use of tailing piles so that tailings will not be left in a condition which is contrary to the intent of the remedy;
2. Removal of debris such as wood, empty drums, and other garbage in the tailing piles for off-Site disposal in order to effectively implement the soil cover with vegetation;
3. Soil cover with vegetation in the following areas:
 - Operable Unit I tailings in Lake Linden, Hubbell/Tamarack City, and Mason (approximately 442 acres),
 - Operable Unit III tailings in Calumet Lake, Boston Pond, Michigan Smelter, Dollar Bay, and Grosse-Point (approximately 229 acres), and
 - Operable Unit I slag pile in Hubbell (approximately 9 acres);
4. The Isle-Royale tailings in OUIII are excluded from the area to be covered with soil and vegetation under the ROD as follows:
 - The portion of Isle-Royale tailings in OUIII which is being developed as a sewage treatment plant is excluded from the area to be covered with soil and vegetation. The part of this area to be covered by conventional sewage treatment tanks is approximately 12 acres. The remaining part, approximately 48 acres, will be covered with soil and vegetation by the Portage Lake Water and Sewage Authority as part of the sewage treatment facility development plan. However, if this area is not covered and vegetated within 5 years after the date that the final Remedial Design is submitted, then this area shall be subject to the requirements of the ROD;

- The portion of the Isle-Royale tailings which is designated to be developed as a residential area is excluded some the area to be covered with soil and vegetation. This area covers approximately 90 acres. However, if this area is not developed as a residential area within 5 years after the date that the final Remedial Design is submitted, then this area shall be subject to the requirements of the ROD;
 - The portion of the Isle-Royale tailings which is currently being used as source material to make cement blocks and as a finished block storage area for the Superior Block Company is excluded from the area to be covered with soil and vegetation. This area covers approximately 60 acres. However, if any portion of the area is no longer to be used as a storage and source area, soil cover with vegetation must be implemented pursuant to the ROD. The owner and/or operator of Superior Block Co. must use dust control measures such as water spray during the operation of mining and other activities in order to reduce the release of dust into the air;
5. The area designated by the Houghton County Road Commission as source material to spread on the road during winter to provide traction for motor vehicles is excluded from the area to be covered with soil and vegetation. This area is located at Point Mills in OUIII and is estimated to be 46 acres. While this area is being utilized, the following procedures must be observed:
- The area should be covered with enough soil to prevent the release of tailings to the air and lake;
 - Excavation should stop at seven (7) feet above the water table (defined as the average of seasonal highs and lows over a two year period). This portion must subsequently be covered with soil or soil and vegetation;
 - Once the entire area is excavated to seven (7) feet above the water table, it must be covered with soil and vegetation;
6. Assuming that the slag pile located in the Quincy Smelter area (approximately 25 acres) will be developed as part of a National Park, no action will be taken. If this area is not developed as a National Park in the future, deed restrictions will be sought to prevent the development of residences in the slag pile area;
7. The North Entry (location 4 on attachment 1), Redridge (location 11 on attachment 1) and Freda (location 12 on attachment 1) tailings are excluded from the area to be covered with soil and vegetation. Locations 4, 11, and 12 are along the Lake Superior shore where pounding waves and water currents will likely retard or destroy any remedial actions. As a result, EPA currently believes it to be technically impracticable to implement the chosen remedy at these locations. However, the North Entry (location 4) and Freda (location 12) tailings, approximately 46 acres, shall be studied during Remedial Design. If EPA determines that any portion of these areas is sufficiently unaffected by Lake Superior wave activity such that it can be effectively covered with soil and vegetated, then the unaffected area or areas shall be subject to the requirements of the ROD; and
8. Long-term monitoring of groundwater, surface water, sediment, and general ecological recovery including an evaluation of the rate and effectiveness of organic sediment build-up and the recovery of the benthic community.

Four memoranda to the Site file were prepared in 2002 to document and justify nonsignificant changes that arose during design and construction. These changes were necessary to ensure effective implementation of the remedy. The changes include (1) the installation of shoreline protection in the form of rip-rap and lake access ramps (Point Mills), (2) installation of compacted gravel as a cover material on a small portion of the Site (Dollar Bay), (3) taking no action at the Hubbell/Tamarack coal dock (location presented in attachment 2), and (4) application of vegetation at Gull Island (location presented in attachment 2) located in Torch Lake. In addition, two design reports were finalized in September 1998 to support remedy implementation at North Entry and Scales Creek (location presented in attachment 1).

The selected remedy for OUII is no action. OUII is related to OUI and OUIII primarily in that wind-blown and eroded tailings from OUI and OUIII end up in OUII. These conditions serve as a continuing source of environmentally harmful contamination to the lake and diminish the effectiveness of the lake's natural sedimentation process. The remedy chosen for OUI and OUIII, stabilization and revegetation of the tailing piles near the lake, was in part selected because it will address the erosion problem. Furthermore, Torch Lake may already be undergoing a recovery in those portions which are not subject to the tailings eroded from the shoreline. Once the remedy for OUI and OUIII has been implemented, near shore areas may also recover.

The remedy selected for OUII takes into consideration and relies upon:

- The reduction of tailing loading to surface water bodies expected as a result of the remedial action which will be taken at OUI and OUIII.
- Ongoing natural sedimentation and detoxification such as that which is occurring in other surface water bodies in the area.
- Institutional programs and practices controlling potential future exposure to site-affected groundwater which are administered at the county and state level.
- Groundwater, surface water, sediment, and general ecological monitoring including an evaluation of the rate and effectiveness of organic sediment build-up and the recovery of the benthic community as included as part of the remedy for OUI and OUIII. This monitoring will provide information on the effectiveness of the remedy and on the extent of environmental impacts. Since the effectiveness of the remedy chosen for OUI and OUIII will in part be measured by assessing effects on Torch Lake, the monitoring program for OUI and OUIII would be incomplete if it did not encompass the OUII study area. In addition, the five year review process will include an evaluation of the status of Torch Lake sediments and ecology, and will reassess the necessity for remedial action should the extent of the lake's recovery fall short of expectations.

The selected remedies eliminate the principle threat posed by the Site by reducing the toxicity and mobility of the contaminated materials, thereby reducing the potential exposure and impact of Site contaminants.

Remedy Implementation

In August 1994, an Interagency Agreement (IAG) was signed with the United States Department of Agriculture (USDA)-Natural Resources Conservation Service (NRCS) to perform remedial design (RD) work. The RD was conducted in conformance with the 1992 ROD. The RD was completed for the entire Site in September 1998.

Also in September 1998, an IAG was signed with the USDA-NRCS to perform remedial action (RA) management and oversight. The September 1998 IAG was funded with \$15.2 million dollars. EPA believes that USDA-NRCS is the best choice for construction management and oversight because of its extensive history with soil erosion and stabilization projects, its experience with the Site, it has an office in Houghton, Michigan, and its staff have a rapport with the local community.

The IAG construction schedule was set at six years (1999 - 2004). It was estimated in the 1992 ROD (Description of Remedial Alternatives section) that remedy implementation time would be 5 years. Other factors that influenced the construction schedule include restricted availability of USDA-NRCS engineers, relatively short construction season due to the northerly location of the Site, and possible public health and safety issues related to the relatively vast distance between Site parcels targeted for remediation. Because of the distance between Site parcels, EPA anticipated large volumes of heavy equipment operating simultaneously on multiple local roads located in populated areas, and USDA-NRCS was expected to maintain strict control of heavy equipment traffic during construction. To accomplish this goal, USDA-NRCS needed to implement the remedy in phases.

Actual on-Site construction began in June 1999. Currently, about 80% of the Site remedy is complete, including all of OUI (parcels at Lake Linden, Hubbell/Tamarack and Mason). Lake Linden (114 acres covered) was completed by October 1999. A copy of the required deed restrictions for the Lake Linden parcel was obtained by EPA in 2001 to verify the completion of this component of the remedy and filed in the EPA's Torch Lake Site Administrative Record. Hubbell/Tamarack (140 acres covered) was completed by October 2000. However, a washout occurred near the lake outlet of a surface water diversion path in 2001 and a very minor washout occurred in the same area in 2002. Both washouts were promptly repaired and are expected to remain stable. Mason (232 acres covered) and Dollar Bay (15 acres covered) were completed by October 2002. Point Mills (112 acres total area to be covered) is currently about 95% complete. Point Mills is expected to be finished in summer 2003, after EPA resolves access issues (summarized in attachment 6) at three acres on the western most portion of Point Mills (attachment 3).

Just prior to on-Site construction activities at Mason, the USDA-NRCS commissioned Michigan Technological University to conduct an archaeological survey to evaluate and document the cultural remains at the Mason portion of the Site. This was done because of the numerous historical mining and milling related relics located around the Mason area and the concern over losing important cultural remains as a result of remedy implementation. The results of the survey are presented in a report dated May 2001 which was filed in the EPA's Torch Lake Site Administrative Record. The May 2001 report concludes that implementation of the remedy at the Mason portion of the Site would have only a minor negative impact on cultural and historical values, and therefore, EPA proceeded with remedy implementation.

Remediated areas include cover material consisting of six to ten inches of sandy-loam soil and a vegetative mat. The vegetative mat was achieved through a seed mix applied directly on top of the sandy-loam soil. The seed mix was typically applied at approximately 90 pounds per acre. The typical seed mix contained six species of plants, including perennial ryegrass (*Lolium perenne*), tall fescue (*Festuca arundinacea*), creeping red fescue (*Festuca rubra*), red clover (*Trifolium pratense*), alfalfa (*Medicago falcata*), and birdsfoot trefoil (*Lotus corniculatus*). This mix of plant species was selected because of their rapid growth rate and because they are relatively resilient. Rapid stabilization of the soil cover material with vegetation is important at the Site in order to avoid soil washouts and to accommodate the short growing season. Variations of this seed mix were applied to a small number of areas to accommodate landowner preference. Overall, the vegetative growth in most areas is well established and is stabilizing the soil portion of the cover material.

The sandy-loam borrow soil was located and obtained by the construction firms under contract with the USDA-NRCS to implement the remedy and met USDA-NRCS soil specifications. Borrow soil locations are presented in attachments 2 and 3. Borrow soils for Lake Linden were obtained approximately 1.5 miles south of Lake Linden near the eastern shore of Torch Lake. Borrow soils for Hubbell/Tamarack were obtained directly west of Highway M-26 at the southern end of Hubbell/Tamarack. Borrow soils for Mason were obtained directly across the narrow Torch Lake channel located on the south-east shore of the Mason tailings in accordance with the 1997 PPA (see Section III, Initial Response). Borrow soils for Point Mills and Dollar Bay were obtained from a combination of two sources. One source was located near the Mason borrow soil source and one was located on a property directly adjacent to the Point Mills tailings. Borrow soils for the remainder of the areas targeted for remediation will be located just prior to construction.

Shoreline protection was also installed along much of the shoreline where the remedy was implemented. Shoreline protection includes rip-rap rock (rock boulders averaging about one-foot in diameter in the shape midway between a sphere and a cube with a specified density and integrity) which protects the remedy from wave erosion. As explained and justified in a memorandum to the Site file dated March 18, 2002, extensive shoreline protection was installed at Point Mills and included fake access ramps consisting of 24-foot sections of flat, interlocking block at various properties.

As explained and justified in a memorandum to the Site file dated November 7, 2002, 6.4 acres at Dollar Bay were covered with compacted gravel instead of soil and vegetation.

As explained and justified in a memorandum to the Site file dated November 22, 2002, no action will be taken at the coal dock property (see attachment 2) located at Hubbell/Tamarack.

As-built construction drawings were completed for the Lake Linden (dated November 2, 1999) and Hubbell/Tamarack (dated May 8, 2001) portions of the Site and filed in the EPA's Torch Lake Site Administrative Record. EPA anticipates the completion of as-built construction drawings for the Mason portion of the Site by spring 2003.

EPA and MDEQ have determined that RA construction activities have so far been performed according to specifications and anticipate that cover material and shoreline protection installed at the Site will meet remedial action objectives for the Site. For Lake Linden, EPA and MDEQ determined that the remedy is functioning as intended and in April 2002, partial NPL delisting of Lake Linden and all of OUII was finalized. As discussed earlier in this report, the remedy for OUII was no action. Because all work required to complete the no action remedy has been completed, EPA included OUII in the April 2002 partial NPL delisting. EPA intends to pursue partial NPL delisting of Hubbell/Tamarack in 2003. Other portions of the Site will be delisted after the remedy has been implemented and is functioning as intended.

In 1999 and 2000, as part of the remedy requirement for long-term monitoring, EPA conducted environmental sampling as a way to establish the environmental baseline conditions of Torch Lake. The results of the sampling efforts are presented in the Baseline Study Report dated August 2001. It is anticipated that future long-term monitoring events will be conducted by the MDEQ and the results compared to the 2001 baseline study to identify changes and/or establish trends in lake conditions.

Although not required as part of the remedy, in 2002, EPA conducted a study of terrestrial environments at the Site to characterize and document the ecological conditions of the tailing areas before and after implementation of the remedy. The results of the study are presented in the Torch Lake Stamp Sand Evaluation Report dated March 2003.

Work scheduled for summer 2003 includes construction of cover material at Calumet Lake (14 acres), Boston Pond (25 acres), Michigan Smelter (14 acres), the portion of Isle-Royale that was developed as sewage treatment plant (48 acres), and remainder of Point Mills (attachment 3). EPA anticipates that Gull Island (see attachment 2) will be vegetated in spring 2003 in accordance with the memorandum to the Site file dated December 31, 2002. Additional restoration work at the Mason borrow soil source area will also be completed, as well as some road repair work around Point Mills that is necessary because of borrow soil truck traffic damage done in 2002.

It is expected that the entire Site remedy will be completed by the end of 2003 or 2004. A completion date will be determined after EPA makes a final decision on whether to eliminate the remediation plans for two areas referred to as North Entry and Scales Creek (see attachment 1). A discussion of this issue is presented below. After construction is complete, EPA will issue a Preliminary Close Out Report (PCOR). When all outstanding items identified in the PCOR have been addressed, EPA will issue a Final Close Out Report (FCOR).

North Entry (32 acres) and Scales Creek (19 acres) are currently under review and evaluation for possible elimination from remediation plans. EPA's current position on this issue is to take no action at these areas. EPA's position and evidence to support this position were detailed in a letter to the MDEQ dated December 27, 2002. A final determination concerning the possible elimination from remediation plans of one or both of these areas will be made in late summer 2003, after the MDEQ has had ample opportunity to review and comment on EPA's December 27, 2002 position letter. Remediation efforts for North Entry and/or Scales Creek are scheduled for 2004, unless the evaluation determines that remediation efforts at both these areas are not necessary.

Operation and Maintenance (O&M)

The MDEQ will be conducting O&M of the shoreline protection and cover material. In accordance with the September 1998 Superfund Site Contract (SSC) signed by EPA and MDEQ, O&M is to begin after an establishment period of up to three years after the construction of the last parcel or until the remedy is jointly determined by EPA and MDEQ to be functioning properly as designed, whichever is earlier.

Currently, the only parcel that has officially entered into the O&M phase is Lake Linden. The MDEQ is conducting O&M at Lake Linden in accordance with the January 2000 O&M Plan. The official O&M start date for Lake Linden was September 27, 2001. This date is based on a MDEQ letter to EPA dated September 27, 2001. The letter confirmed MDEQ's belief that the cover on the Lake Linden parcel is functioning properly and performing as designed, and further requested that Lake Linden be deleted from the NPL.

The primary activities associated with Site wide O&M include:

- Site inspections and evaluations of cover material and shoreline protection integrity;
- Minor repairs of shoreline protection and/or cover material;
- Site inspection and repair of fencing, as needed; and
- Long-term monitoring of groundwater, surface water, sediment, and general ecological conditions including evaluation's of the rate and effectiveness of the natural recovery of area water bodies. It is anticipated that the time needed for the adequate natural recovery of area water bodies will be determined over the next ten years through the long-term monitoring program.
-

The O&M costs presented in the 1992 ROD are \$108,000 for the entire Site over ten years. Lake Linden constitutes approximately 15% of the Site and, therefore, approximately \$16,000 over ten years or \$1,600 per year according to the ROD estimates. However, since 2000, the integrity of the cover at the Lake Linden parcel has been such that there has not been any need for repair work and the costs have been minimal (mainly inspection work).

The O&M costs for long-term monitoring was not presented in either the 1992 or 1994 RODs. In addition, the frequency of long-term monitoring events has yet to be determined. However, based on the 2001 baseline study, one monitoring event may cost an average of approximately \$150,000. Assuming one monitoring event at least every five years for thirty years (including the first year - seven event total), the total cost of long-term monitoring may be approximately \$1,050,000.

Although not a required part of the remedy, EPA also intends to continue monitoring the ecological progress of the remediated terrestrial environments at the Site. Monitoring parameters will likely be similar to the parameters presented in the Torch Lake Stamp Sand Evaluation Report dated March 2003. The frequency of monitoring will be determined within the next two years. Based on the March 2003 study, the cost is expected to be very minimal and primarily include a limited number of hours from EPA staff.

V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

This is the first five-year review for the Site.

VI. FIVE-YEAR REVIEW PROCESS

Administrative Components

Members of the MDEQ and USDA-NRCS were notified of the initiation of the five-year review in October 2002. The Torch Lake Five-Year Review team was led by Steve Padovani of EPA, RPM for the Torch Lake Site, and included the MDEQ (Mary Schafer) and representatives of the USDA-NRCS.

From October 1, 2002 to March 1, 2003, the RPM established the review schedule. Its components included:

- Community Notification;
- Document Review;
- Data Review;
- Site Inspections;
- Five-Year Review Report Development and Review.

Community Involvement

Activities to involve the community in the five-year review process were initiated in November 2002 with a notification to the Community Involvement Coordinator (CIC) for the Torch Lake Superfund Site. A notice was published on December 12, 2002 in the local newspaper (Daily Mining Gazette) that a five-year review was to be conducted.

Since the notice and press release were issued, no member of the community voiced an interest and/or opinion concerning the five-year review process.

Document Review

This five-year review consisted of a review of relevant documents including RODs, memoranda to the Site file, ORM records, construction specifications, evaluation reports, and monitoring data (see attachment 4). Applicable cleanup standards/goals, as listed in the 1992 and 1994 RODs, were also reviewed (see attachment 5).

Data Review

In August 2001, the EPA completed the first round of sampling activities (Baseline Study) for the long-term monitoring program. The objective of the Baseline Study was to establish the conditions of Torch Lake and nearby groundwater before completion of the remedial action. The Baseline Study was also intended to establish methods and data which can be used as a guide for the sampling efforts of future long-term monitoring activities and as a comparison to future long-term monitoring data to identify changes and/or establish trends in lake conditions over time. Baseline Study work included assessing the benthic community populations, measuring sediment toxicity to benthic invertebrates, measuring concentrations of metals and semi-volatile organic compounds in sediment, surface water and groundwater, and studying the sedimentation process in lake sediments. Field sampling for the Baseline Study was conducted in 1999 and 2000.

In general, work performed for the Baseline Study sufficiently met the objectives of the study. Selected results are as follows:

- Analytical results from lake sediment samples indicate that metals (especially copper) are relatively high in concentration and persistent in sediments at the surface (0-6 inches) and at depth (down to 100 inches). For example, copper was detected in the majority of surface and core sediment samples as concentrations greater than 1000ppm. The highest concentrations of copper (approximately 5000ppm) were detected in surface and core sediment samples collected immediately adjacent to the western shore of Torch Lake, in an area approximately midway between Lake Linden and Hubbell, commonly referred to as the "hot spot" in previous documents such as the RI Report for OUI. At depth, copper concentrations were generally variable and inconsistent, but did show an increased trend in recent sediments. In addition, the consistency and color of sediment changes below 10 centimeters from brown and relatively firm to pinkish, purple and watery;

- Sediment toxicity test results indicated significant toxic impacts from the majority of Torch Lake sediment samples on the survival and growth of laboratory-reared invertebrates. This indicates that something in the Torch Lake sediments is capable of causing either reduced survival (i.e. death) or reduced growth, or both. Based on this, it can be assumed that the sediments, as they currently exist, are having similar impacts on the invertebrates found in the lake;
- Results of the benthic community surveys indicate an impacted benthic community. Although no specific biological indices were calculated using this data, both the diversity of species and abundance of individuals appear to be low;
- Surface water samples indicate a relatively uniform distribution of metals;
- None of the metals detected in groundwater samples exceeded current federal drinking water standards;
- Semi-volatile organic compounds were not detected in surface or core sediment samples;
- Semi-volatile organic compounds detected in surface water and groundwater samples were not significant (few detects and at low concentrations).

Although the Site encompasses water bodies other than Torch Lake itself, the Baseline Study concentrates on Torch Lake impacts only. Arguably, Torch Lake has borne the most extensive and sustained environmental impact of any water body at the Site, and therefore is representative of the greatest ecological lake impact in the study area. EPA is confident that information presented in the Baseline Study Report for Torch Lake is also applicable to the balance of water bodies at the Site. In addition, if it can be concluded from future monitoring that ecological conditions in Torch Lake are improving, EPA is confident that ecological conditions will be improving for the balance of water bodies at the Site. However, once it is confirmed that ecological conditions in Torch Lake are improving, future sampling of the other water bodies within the Site should be done to verify that ecological conditions in these areas are also improving.

In summer 2002, the EPA completed a study of the terrestrial environments at the Site. The purpose of this work was to characterize and document the ecological conditions of the tailing areas both before and after implementation of the remedy. As such, both un-remediated and remediated areas were selected for evaluation. Un-remediated areas included the Gay Sands which are not part of the Site (see attachment I) and Troesch property located at Point Mills. Remediated areas included areas remediated for one year (Mason), two years (Tamarack) and three years (Lake Linden). The ecological evaluation was primarily concerned with characterizing the ecological setting and resources of these areas. The sampling included: vegetation community analysis (plant identification and diversity, soil fertility, plant nutrition analysis, biomass determination, root penetration and percent coverage), small mammal community survey (live trapping and release) and bird surveys (visual observations of species identification, behavior and weather).

Selected results are as follows:

- Seven species of small mammals were captured during the survey with overall average trap success (including un-remediated areas) of 11% based on a total of 126 individual captures. Trap success on remediated areas was 8.3% at the Mason site (1 growing season), 15% at the Tamarack (two growing seasons) and 6.3% at the Lake Linden site (3 growing seasons). Trap success was 24% in the wooded area surrounding the Gay Sands site, but 0% on the Gay Sands themselves and on the Troesch property. The small mammal species trapped consisted of species that are anticipated to exist in the habitat types present on the remediated areas with colonization occurring in as little as one growing season. Larger mammals observed included a red fox carrying prey on the Tamarack site, along with deer and black bear sign (tracks and scat) on a couple of sites;

- The number of bird species observed ranged from 11 species at the Mason site to 19 species at the Lake Linden area. There were 13 species observed at the Tamarack site and 15 species observed at both the Gay Sands area and the Troesch property. However, at both the Gay Sands area and the Troesch property, there were no birds observed utilizing the tailings. The birds that were observed in the area were in the surrounding edge habitats, although some bird tracks were observed in the center of the Gay Sands area;
- At the Mason area, 19 plant species were identified. Similarly, 12 species and 17 species were noted at Tamarack and Lake Linden respectively. This is interesting in light of the fact that approximately eight species or less were planted at each of these areas. This indicates that either the soil brought in for cover or nearby habitats (or both) served as seed sources resulting in a greater plant biodiversity than expected. However, many of the dominant plant species are not optima for providing wildlife habitat. As additional species are introduced (by wind, birds and other environmental means) to the treated sites, wildlife habitats should develop further with increases in biodiversity with time;
- For most of the soil fertility parameters evaluated, there did not seem to be much difference between the three treated areas. Interestingly, the soil pH of the three treated sites were similar and within optimum range for plant growth, while the pH of the untreated areas was higher and outside the optimum range for plant growth. Plant biomass was high at the three treated sites ranging from 800 kilograms per hectare (kg/ha) at Tamarack to 1200 kg/ha at the Mason and Lake Linden sites. There does not appear to be a relationship between time of treatment and biomass yield. There was almost no vegetation growing on the tailings at the Gay Sands and Troesch property. Although the Gay Sands did have some small tufts of hairgrass and yarrow and the Troesch site had plants growing on a small area that had a thin layer of soil cover. Therefore, the limitation for plant growth was determined to be the tailings (lack of nutrients, moisture and optimum growing conditions);
- Overall soil coverage by vegetation was 55% at Mason, 63% at Tamarack and 66% at the Lake Linden area. Since vegetation was only established for a year or less on the Mason site, it is expected that this coverage will increase with time. This soil coverage indicates that the soil cap and re-vegetation process was successful at the Torch Lake sites investigated since soil coverage greater than 55% significantly reduces wind and rain erosion of topsoil into the lake and attracts small mammals to the areas;
- Root growth and development are quite sensitive to environmental factors. When soil conditions are unfavorable, roots are usually short and stubby with few lateral roots. Healthy roots are white and are able to penetrate deeper in the soil profile. Root growth for the three treated areas is correlated with treatment time. The depth of the deepest roots increase from the Mason site, mean equal 13.7 centimeters (cm) (one growing season) to Lake Linden with a mean of 19.6 cm (three growing seasons). Since the average soil cap is 15 cm, the roots at the Lake Linden site have penetrated the soil cap and are into the tailings. It is then important to monitor plant root growth in the future to see if the roots would penetrate deeper, and whether the deep root penetration will significantly affect copper concentration in the plants, thus the copper concentrations available to herbivores (plant eating animals).

The results of the mammal, bird and plant surveys, in addition to the soil fertility work, indicate that there is much greater biodiversity of plants and animals on the treated sites versus the untreated areas. While the plant species that currently dominate the treated sites may not be optimal for wildlife habitat, they do provide good cover as evidenced by the results of this study. In the future, new species will be introduced via natural biological processes that should only increase the value of the sites to wildlife (birds, mammals, amphibians, etc.). Further monitoring of these sites is recommended to document the success of the remedy.

Michigan State University is currently conducting studies (funded by the State of Michigan) of trees growing in small areas of tailing piles located at Calumet Lake and Boston Pond. Tree growth in these areas, as well as other limited plant growth on some tailing piles, suggests that some plant species can adapt to survive on certain areas of tailing environments at the Site. For more information contact the MDEQ at 517-373-9832.

Site Inspections

Inspections at the Site were conducted during the week of October 7, 2002 by the EPA RPM, USDA-NRCS personnel and MDEQ personnel. The purpose of the inspections was to assess the progress of remedy implementation, protectiveness of the remedy, evaluate the performance of the soil and vegetative cap where applied, and evaluate future remedy implementation problems and needs.

Issues identified at the completed areas of the remedy included minor soil washouts of the soil cover material which need repair and the need for addition restoration work on the Mason borrow soil source area. In addition, based on an inspection of Gull Island, EPA confirmed the need for stabilization via vegetation of the tailings. At Lake Linden, the MDEQ noted the application of tailings around culverts recently installed and on the surface of trails and campground pads.

The institutional controls that are in place include restrictions to control the use of tailing piles so that tailings will not be left in a condition which is contrary to the intent of the 1992 ROD. Specifically, Site landowners must ensure that tailing and/or slag material is ultimately covered after any activity which disturbs the soil cover to prevent these materials from entering any area water-body. To date, EPA has confirmed that the Lake Linden portion of the Site has the proper institutional controls in place and no activities were observed that would have violated the institutional controls. In addition, EPA has confirmed that the Hubbell/Tamarack portion of the Site has the proper institutional controls in place at all properties except two and that no activities were observed that would have violated the institutional controls. EPA expects confirmation on institutional controls at the last two properties at the Hubbell/Tamarack portion of the Site by spring 2003.

Interviews

Interviews with individuals beyond the five-year review project team were not conducted. Since the news paper add was placed, no member of the community or any other individual voiced any interest in conducting an interview related to the five-year review.

VII. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

Based on a review of relevant documents, applicable or relevant and appropriate requirements (ARAI4), risk assumptions, and the results of the Site inspection, it appears to EPA that the remedy will function as intended by the RODs and the four memoranda to the Site file once the remedy has been implemented in all areas.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. However, the exposure assumptions for groundwater (i.e., no one is drinking groundwater affected by the Site) should be periodically verified (see VIII. Issues).

Changes in Standards and To be Considers

A list of ARARs is included in Attachment 5. There have been no changes in these ARARs and no new standards or to be considers (TBCs) affecting the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure assumptions used to develop the Human Health Risk Assessment included exposure to contaminated tailings and slag from a possible current and future ingestion, inhalation, and dermal contact pathway. The exposure assumptions used to develop the ecological assessment included high toxicity to benthic communities from high metal concentrations in sediments. Toxicity tests confirmed these expectations.

There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. No change to these assumptions is warranted. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. The remedy is progressing as expected and it is expected that all cleanup goals will be met, as specified in the RODs.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other events have affected the protectiveness of the remedy and there is no other information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

Based on a review of relevant documents, data, applicable or relevant and appropriate requirements (ARARs), risk assumptions, and the results of the Site inspection, it appears to EPA that the remedy will function as intended by the RODs and the four memoranda to the Site file once the remedy has been implemented in all areas. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. No change to these assumptions is warranted. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. The remedy is progressing as expected and it is expected that all cleanup goals will be met, as specified in the RODs. There is no other information available that calls into question the protectiveness of the remedy.

VIII. ISSUES

Table 2 - Issues

Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Need to complete all remedy requirements in accordance with the 1992 ROD and memoranda to Site file.	N	Y
Need to ensure deed restrictions are in place in accordance with the 1992 ROD and 1994 AOC (see Section III - Initial Response). To date, only a small number of these restrictions have been verified to be in place.	N	Y
Need to conduct a periodic review of groundwater uses at the Site and the effectiveness of the county well permitting process in preventing drinking water well installation in tailings at the Site. Currently, EPA is not aware of any drinking water wells at the Site that use tailings as a potable water source.	N	Y
Need to make repairs to cover material and shoreline protection, as necessary, to ensure long-term integrity of remedy.	N	Y
Need to investigate MDEQ observation that tailings have been applied around recently installed culverts and on the surface of trails and campground pads at the Lake Linden parcel.	N	Y
Need to complete restoration of Mason borrow-soil source.	N	N*
Need to complete evaluation of North Entry and Scales Creek for possible elimination from remediation plans.	N	N*
Need to resolve access issues at Point Mills (summary in attachment 6).	N	Y
Need to evaluate long-term access for conducting monitoring and O&M activities.	N	Y
Need to evaluate Houghton County Road Commission's road traction tailing excavation practices at Point Mills relative to 1992 ROD requirements.	N	Y
Evaluate the need for deed restrictions to prevent the development of residences in the slag area of Quincy Smelter.	N	Y

* While this issue does not affect the protectiveness of the remedy, EPA included it in the list of issues because of its importance to the MDEQ, community and EPA.

IX. Recommendations and Follow-Up Actions

Table 3 - Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Complete Remedy.	Maintain current IAG contract with USDA-NRCS and work cooperatively with USDA-NRCS to ensure the work is adequately completed.	EPA/USDA-NRCS	EPA/MDEQ	Fall 2004	N	Y
Ensure deed restrictions are in place.	Continue to seek documentation from landowners at the Site to verify proper deed restrictions have been put in place, and if they are not, work with the landowners and/or county to ensure deed restrictions are put in place.	EPA/MDEQ	EPA/MDEQ	Fall 2004	N	Y
Conduct periodic review of groundwater uses at the Site and review the effectiveness of the county well permitting process.	Conduct periodic on-Site inspections of groundwater use and work with county officials to evaluate the effectiveness of the county well permitting process in preventing the installation of drinking water wells in tailings.	EPA/MDEQ Houghton County	EPA/MDEQ	Fall 2003 and every 5 years after that	N	Y
Repair cover and shoreline protection, as needed.	Conduct routine inspections and coordinate repair work with USDA-NRCS and/or State.	USDA/NCRS/ EPA/State	EPA/MDEQ	2007 (year the State expects to take on Site-wide O&M responsibilities)	N	Y
Investigate potential surface tailings at Lake Linden.	Conduct Site inspection and if tailings are confirmed, evaluate the potential for tailings to enter Torch Lake.	MDEQ/EPA	EPA	2004	N	Y
Complete restoration of Mason borrow-source soils.	Ensure USDA-NRCS addresses and adequately completes this work in 2003.	USDA-NRCS/EPA	EPA/MDEQ	Summer 2003	N	N*
Complete evaluation of North Entry and Scales Creek.	Review State response to EPA's 12/27/02 2003 letter and establish a final position in a letter to State.	EPA/State	EPA	Summer 2003	N	N*

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Point Mills Access (summary in attachment 6).	Continue to work with the Office of Region Counsel, Department of Justice, and the Federal court system to enforce two Administrative Orders for Access dated April 2002.	EPA	EPA	Spring 2003	N	Y
Evaluate long-term access.	Review 1994 AOC and other access agreements for applicability to long-term access. Seek additional/updated access agreements where necessary.	MDEQ	MDEQ	2004	N	Y
Evaluate Houghton County Road Commission's road traction tailing excavation practices at Point Mills.	Work with the Houghton County Road Commission to ensure practices are consistent with the 1992 ROD and/or evaluate the need for possible modification of the specific 1992 ROD requirements on this issue to better reflect current engineering and protectiveness needs.	EPA/MDEQ	EPA/MDEQ	2004	N	Y
Deed restrictions to prevent the development of residences in the slag area of Quincy Smelter.	Work with landowner and stakeholders to 2003 determine Historical Park redevelopment schedule. If a redevelopment schedule cannot be committed to by the end of 2003, work with the landowner and/or county to have deed restrictions immediately in place to prevent residential development of the slag area.	EPA/MDEQ	EPA/MDEQ	End of 2003	N	Y

* While this issue does not affect the protectiveness of the remedy, EPA included it in the list of issues because of its importance to the MDEQ, community and EPA.

X. Protectiveness Statement

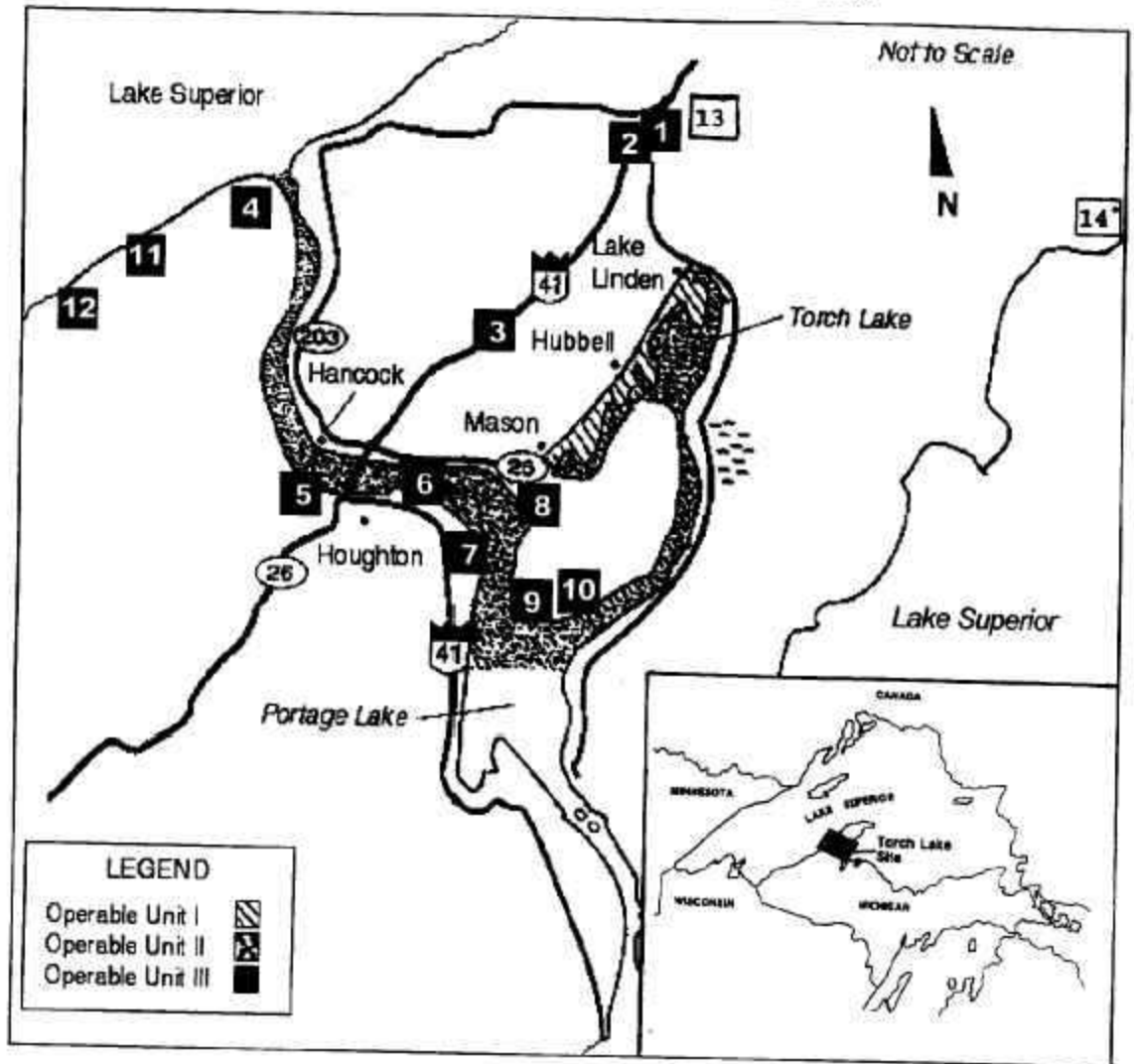
The remedy will be protective of human health and the environment once all the remedy has been completed in accordance with the two RODs and four memoranda to the Site file.

XI. Next Review

The next five-year review for the Torch Lake Superfund Site is required by March 2008, five years from the date of this review.

ATTACHMENTS

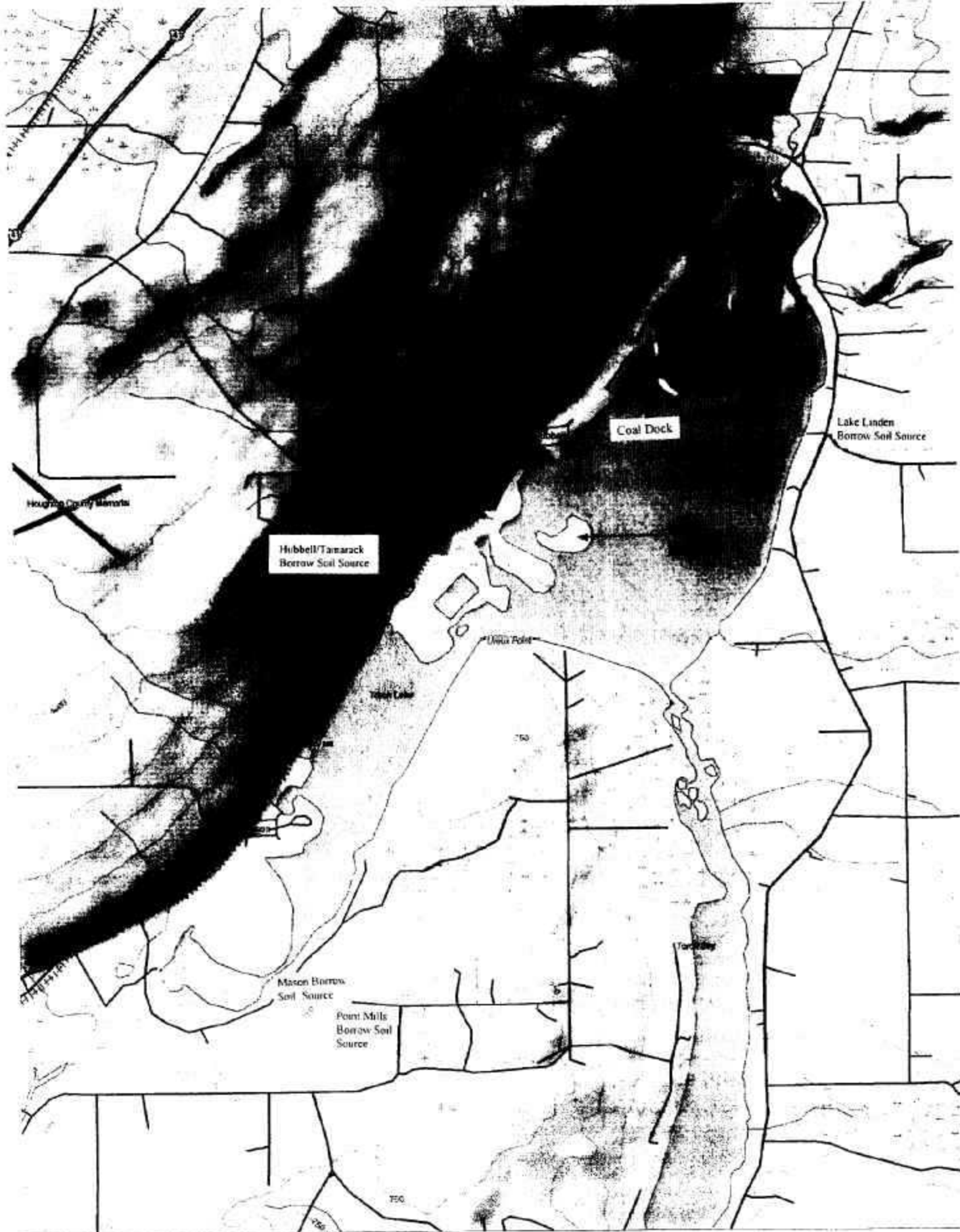
Attachment 1 - Site Location and Plan Map



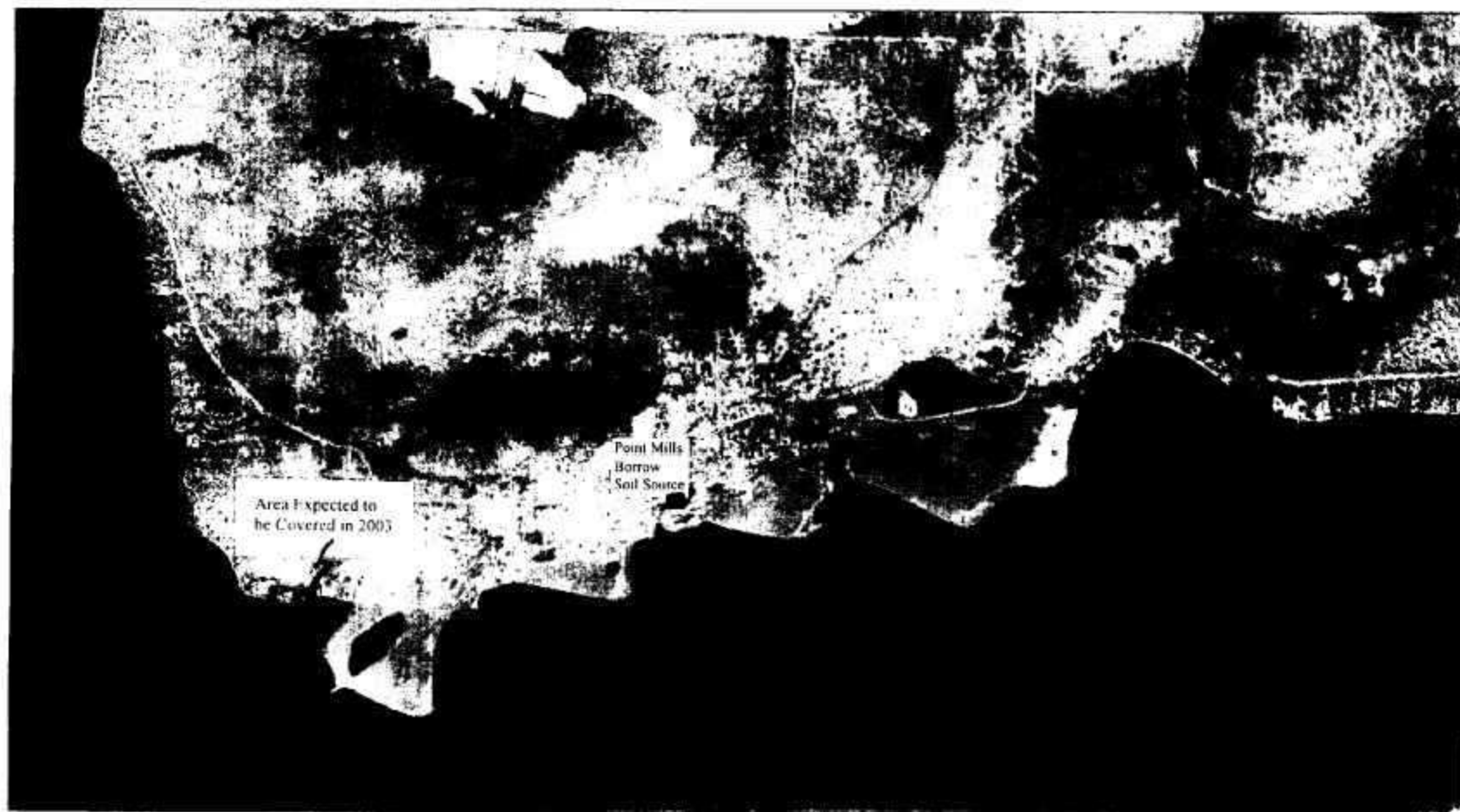
(Image recreated from EPA 1992 ROD)

- 1 = Calumet Lake
- 2 = Calumet Poor Rock
- 3 = Boston Pond
- 4 = North Entry
- 5 = Michigan Smelter
- 6 = Quincy Smelter
- 7 = Isle-Royale
- 8 = Dollar Bay
- 9 = Point Mills
- 10 = Point Mills
- 11 = Atlantic Stamp Mills
- 12 = Adventure/Trimountain/
Champion Stamp Mills
- 13 = Scales Creek
- 14* = Gay Sands

* Not part of the Torch Lake Superfund Site definition



Attachment 2 - Torch Lake Site Map/Borrow-Soil Source Areas



Area Expected to
be Covered in 2003

Point Mills
Borrow
Soil Source



May 26, 1998

July 9, 1998 WFOJETS255

WFO FILE: 04ANDM-F01003-010000-000000 TORCH LAKE STAMP SANDS EVAL

U.S. EPA Environmental Response Team Center
Response Engineering and Analytical Contract
68-C98-223
W.A.R. R1A00255

FIGURE
0 YEAR SITE
TORCH LAKE STAMP SANDS EVAL
HOUGHTON, MI

Attachment 3 - Point Mills Site Map

ATTACHMENT 4
List of Documents Reviewed

Torch Lake Superfund Site Record of Decision for OUI and OUIII, September 30, 1992

Torch Lake Superfund Site Record of Decision and Remedy Position Paper for OUII, March 31, 1994

Declaration of Restrictive Covenant re: Property in the Village of Lake Linden, March 24, 1994

Administrative Order on Consent (AOC) between EPA and multiple Site property owners, 1994

Prospective Purchaser Agreement (PPA) between EPA and the landowners of the Mason tailings portion of the Site (Quincy Development Corporation and Lakeshore Estates Association), January 10, 1997

Treatment Plan Folder [Design Report) for North Entry, September 1998

Treatment Plan Folder [Design Report) for Scales Creek, September 1998

Superfund Site Contract between EPA and MDEQ, September 10, 1998

Construction Completion Report: As-Built Drawings for the Lake Linden Sands, November 2, 1999

Torch Lake Superfund Site Operation and Maintenance Plan for the Lake Linden Stamp Sands, January 6, 2000

Torch Lake Superfund Site Activity Reports from USDA-NRCS, 1999 - 2002

Archaeological Survey Report for Mason Sands. prepared by Michigan Technological University, May 2001

Construction Completion Report: As-Built Drawings for the Tamarack City Project Area, May 8, 2001

Torch Lake Superfund Site Baseline Study Report, August 2001

Memorandum to the Torch Lake Site tile: Discussion of Shoreline Protection and Gravel Driveways at the Point Mills Portion of the Torch Lake Superfund Site, March 18 2002

Memorandum to the Torch Lake Site file: Gravel Cover at the Dollar Bay Portion of the Torch Lake Superfund Site, November 7. 2002

Memorandum to the Torch Lake Site file: No Action at the Coal Dock Property Located at the Hubbell/Tamarack Portion of the Torch Lake Superfund Site. November 22. 2002

Memorandum to the Torch Lake Site file: Vegetation Planting at Gull Island, December 31, 2002

Final Report, Torch Lake Stamp Sand Evaluation, Torch Lake Site, Keweenaw, Michigan, March 2003

Letter form EPA to MDEQ concerning North Entry; and Scales Creek Remediation. December 27, 2002

ATTACHMENT 5

Applicable or Relevant and Appropriate Requirements (ARARs)

Chemical Specific

- Clean Air Act (CAA) 40 CFR 50.]-6,8,9,11 and 12.
- Michigan Environmental Response act 307 (1982), MCL 299.601 R 299.5101, Type "C" cleanup. Under the MDNR's reading of Act 307, this ROD is to be considered an Act 307 interim remedy, as allowed by R 299.5509. *Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). U.S. EPA considers this remedy to be a final remedy for Operable Units I and III.
- Michigan Air Pollution Control Act 348 (1965) Part 2,3,9 and 10. *Part 55, Air Pollution Control, of the NREPA.

Action Specific

- Clean Air Act (CAA), 40 CFR Parts 50, 51
- Federal Protection of Wetlands Act, 40 CFR 6, APP.A
- Michigan Act 203 (1974), Wetland Protection Act. *Part 303, Wetlands Protection, of the NREPA.
- Michigan Shoreland Protection and Management Act 245 (1970). *Part 323, Shorelands Protection and Management, of the NREPA.
- Michigan Act 347 (1972), Soil Erosion and Sedimentation Control Act, MCL 282.101 R 323.1701. *Part 91, Soil Erosion and Sedimentation Control, of the NREPA.
- Michigan Act 348 (1965), Parts 2, 3, 9, and 10, Air Pollution Act. *Part 55, Air Pollution Control, of the NREPA.

Location Specific

- Archaeological and Historic Preservation Act, 40 CFR 6.301(c)/16 USC 469
- National Historic Preservation act, 40 CFR 6.301(b)/16 USC 470
- Historic Sites, Buildings and Antiquities Act, 40 CFR 6.301(a)/16 USC 461-467
- Fish and Wildlife Coordination Act, 40 CFR 6.302(g)/16 USC 1531-1566
- Endangered Species Act, 50 CFR Parts 17 and 402/16 USC 1531-1543
- Protection of Wetlands, 40 CFR 6 (App. A)
- Michigan Endangered Species Act 203 (1974), MCL 299.221 R299.1021. *Part 365, Michigan Endangered Species, of the NREPA.
- Michigan Wetland Protection Act 203 (1979), MCL 281.701 R281.921. *Part 303, Wetlands Protection, of the NREPA.
- Michigan Shoreland Protection and Management act 245 (1970), MCL 281.641. *Part 323, Shorelands Protection and Management, of the NREPA.
- Michigan Soil Erosion and Sedimentation Control act 347 (1972), MCL 282.101 R323.1701. *Part 91, Soil Erosion and Sedimentation Control, of the NREPA.

The following regulations are identified as to be considered (TBC) in the 1992 ROD:

- Occupational Safety and Health Act, 29 CFR 120
- Michigan Act 154, Rule 3301 (1974), Michigan Occupational Safety and Health Act.
- MCLA 257.722, Michigan Vehicle Code

Updated citation. While ARARs are frozen at the time the ROD is signed, the MDEQ has indicated that the citations for some state ARARs () can be updated without changing the statutes. For example, the citation for Michigan Environmental Response act 307 (1982) can be updated to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). When the Natural Resources and Environmental Protection Act (Act 451) was adopted in 1994, it simply consolidated state environmental statutes, but did not change them. Thus, Act 307 became Part 201 of Act 451 but nothing that was in Act 301 changed. However, revisions to Part 201 did come later (1995).

ATTACHMENT 6

Summary of Access Issues at Point Mills, Torch Lake Superfund Site

In late fall 2001, design bid specification work began for remedy implementation at the Point Mills and Dollar Bay portions of the Torch Lake Superfund Site (the Site), and EPA needed to resolve all matters involving access well before the actual commencement of work. Out of 30 landowners, 26 voluntary access agreements were signed by early 2002.

The EPA has repeatedly asked the remaining four landowners to allow it to enter their property to perform remedial action work. Despite repeated requests from representatives of the EPA, the four landowners refused to provide written consent for access to their property for the purpose of implementing remedial measures.

In early April 2002, EPA was compelled to issue Administrative Orders (AO) for Access to the four landowners to acquire the necessary access (AO Docket #s V-W-'02-C-682, V-W-'02-C-683, V-W-'02-C-684, and V-W-'02-C-685). The AO required the landowners to notify EPA in writing of their intent to comply or not comply with the order. In late spring 2002 EPA received a signed voluntary access agreement from one landowner and a letter of intent to comply with the AO from a second landowner. To date, EPA has not received any notification from two of the landowners (Leonard and David Simonson). Failure by the Simonsons to provide notice constitutes noncompliance with the terms of the order and in summer 2002, EPA was compelled to refer the matter to the United States Department of Justice (DOJ) for enforcement of the AO.

In November 2002, the DOJ filed a complaint in the U.S. District Court in Marquette, Michigan against the Simonsons seeking enforcement of EPA's Access Orders at Torch Lake. A court ruling on this complaint is currently pending.